REMARKS

Reconsideration and withdrawal of the rejections of the claims, in view of the amendments and remarks herein, is respectfully requested. Claims 5-6 and 20-21 are amended, claims 16-18 and 23-25 are canceled; as a result, claims 5-6, 20-22 and 26-27 are now pending in this application. The amendments are intended to advance the application and are not intended to concede to the correctness of the Examiner's position or to prejudice the prosecution of the claims prior to amendment, which claims are present in an application related to the above-identified application.

Amended claims 5 and 6 are supported by originally-filed claims 5-6, and at page 3, lines 18-20 and page 14, lines 25-30 of the specification.

Amended claims 20-21 are supported by originally-filed claims 2-3.

Applicant respectfully requests that a copy of the 1449 Form, listing all references that were submitted with the Information Disclosure Statement filed on April 18, 2001 and a copy of the 1449 Form, listing all references that were submitted with the Supplemental Information Disclosure Statement filed on February 27, 2003, marked as being considered and initialed by the Examiner, be returned with the next official communication.

The 35 U.S.C. § 112 Rejections

The Examiner rejected claims 5-6, 20-22, and 26-27 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. In particular, the Examiner asserts that no activity is associated with biologically active fragments of a DNA repair polypeptide. The Examiner also rejected claims 5-6, 22, and 26-27 under 35 U.S.C. § 112, first paragraph, alleging that the specification does not reasonably provide enablement for biological fragments. It is Applicant's position that it is well within the skill of the art worker in possession of Applicant's specification to prepare a nucleic acid molecule encoding a fragment of a vertebrate DNA repair polypeptide that is associated with the Mrell/Rad50 complex and has a molecular weight of about 95000 Da, which fragment has DNA repair activity. In particular, assays to detect DNA repair activity are well known to the art, e.g., see Hoekstra (DNA Damage and Repair, Vol. 2 (1998)), a reference cited in support of the 35 U.S.C. § 102 rejections.

Therefore, the amendment to claims 5 and 6, to recite "having DNA repair activity", renders the § 112 rejections moot. Hence, withdrawal of the § 112 rejections is respectfully requested.

The 35 U.S.C. § 102 Rejections

The Examiner rejected claims 5, 22 and 26-27 under 35 U.S.C. § 102(b) as being anticipated by Kowalski (WO 98/07030) as evidenced by pages 348-349 of Nickoloff and Hoekstra (DNA Damage and Repair, Vol. 2 (1998)). The Examiner also rejected claims 6 and 22 under 35 U.S.C. § 102(b) as being anticipated by Housman et al. (WO 98/41648) as evidenced by pages 348-349 of Nickoloff and Hoekstra. The Examiner further rejected claims 5 and 26 under 35 U.S.C. § 102(e) as being anticipated by Camonis et al. (U.S. Patent No. 6,479,237) as evidenced by pages 348-349 of Nickoloff and Hoekstra. These rejections, as they may be maintained with respect to the pending claims, are respectfully traversed.

Kowalski disclose a method to evaluate the carcinogenicity of a compound with a test cell that has a defect in a protective cellular mechanism selected from DNA damage repair, cell cycle control or prevention of damage induced by oxygen free radicals (abstract). It is disclosed that the defect in a DNA repair protein may be a defect in a protein selected from the group of Ku80, DNA-PK_{CS}, 0^6-methylguanine-DNA methyltransferase, uracil DNA glycosylase, hydroxymethyluracil DNA glycosylase, 8-hydroxyguanine DNA glycosylase, AP endonuclease, DNA Polβ, DNA Polϵ, DNA Polδ, poly (ADP-ribose) polymerase, XPA, p89/XPB-ERCC3, p80/XPD-ERCC2, p62(THB1), p44/hssL1, p41/cdk7, p38/cyclinH, p34, XPC(p125), HHRA D23(p58), XPF, ERCC1(p33), XPG(p160), p70, p11, AP-1, NFkB, RNA PolI, RNA PolII, hMLH1, hMSH2, DHFR, HPRT, CSA, or CSB (page 12, lines 11-21). It is further disclosed that test cells can be isolated from individuals with xeroderma pigmentosum, Cockayne's syndrome, trichothiodystrophy, Fanconi's anemia, ataxia-telangiectasia, hereditary nonpolyposis colon cancer, promyelocytic leukemia, lymphoid leukemia, myeloid leukemia, colorectal carcinoma, amyotrophic lateral sclerosis, Li-Fraumeni syndrome, squamous cell carcinoma and Bloom's Syndrome (page 5, line 33-page 6, line 2) and that the test cell may have a naturally occurring defect or an engineered defect (page 15, lines 23-34). The MrelI/Rad50 complex is not mentioned in Kowalski.

Pages 348-349 of Nickoloff and Hoekstra disclose a table listing cloned nucleotide excision repair genes (i.e., ERCC1, XPA, XPB/ERCC3, XPC, XPD/ERCC2, DDB1, XPF/ERCC4, XPG/ERCC5, CSA/ERCC8, CSB/ERCC6, HHR23A, HHR23B, p62TFIIH, p44TFIIH, and LIG1), the size and chromosomal location of those genes, the size of the protein and number of amino acid residues encoded by genes, the homologous protein in *S. cerevisiae*, and the human disease associated with those genes. Neither Nijmegen break syndrome (NBS) nor the Mrell/Rad50 complex is mentioned at pages 348-349 of Nickloff and Hoekstra.

Housman et al. disclose that oligonucleotides can be employed in allele-specific anti-tumor therapy (page 46, lines 21-24). The oligonucleotide is an antisense oligonucleotide that is complementary to a sequence which includes a sequence variance site (page 46, lines 25-26). Target genes for such inhibitors are disclosed as including galactose-1-phosphate uridyltransferase, galactose kinase, UDP galactose-4-epimerase, methionine synthase, asparagine synthase, glutamine synthetase, multidrug resistance gne/Pglycoprotein, multidrug resistance associated proteins 1-5, bleomycin hydrolase, dihydropyrimidine dehydrogenase, β-ureidopropoinase, β-alanine synthetase, cytidine deaminase, thiopurine methyltransferase, CYP1A1, CYP1A2, CYP2A6, CYP2A7, CYP2B6, CYP2B7, CYP2C8, CYP2C9, CYP2C17, CYP2C18, CYP2C19, CYP2D6, CYP2E1, CYP2F1, CYP3A3, CYP3A4, CYP3A5, CYP3A7, CYP4B1, CYP7, CYP11, CYP17, CYP19, CYP21, CYP27, glutathione transferase alpha, glutathione transferase theta, glutathione transferase mu, glutathione transferase pi, methylguanine methyltransferase, 3-alkylguanine alkyltransferase, 3-methyladenine DNA glucosylase, DNA dependent protein kinase, catalytic subunit of DNA-PK, DNA binding subunit of DNA-PK Ku-70 or Ku-80 subunit, KARP-1, Poly(ADP-ribose) polymerase, Fanconi Anemia genes A, B, C, D, E, F, G, and H, ERCC-1, ERCC2/XPD, ERCC3/XPB, ERCC4, ERCC5, ERCC6, XPA, XPC, XPE, HHR23A, HHR23B, uracil glycosylase, 3-methyl adenine DNA glycosylase, NF-kappa B, XRCC4, XRCC5/Ku80, XRCC6, XRCC7, glutathione-X-Transferase, I-kappa B alpha, HSP70, HSP27, and 9-oxoguanine DNA glycosylase. Housman et al. do not mention genes encoding proteins in the Mrell/Rad50 complex.

Camonis et al. relate a method to detect the interaction between several proteins using a vector having at least one conditional promoter. It is disclosed that yeast having a LexA-sensitive operator linked to a *LacZ* gene and vectors for Cdk7 (part of the TFIIH complex),

pLex9-3H, and cyclin H (part of the TFIIH complex) were transformed with vectors encoding fusion proteins with VP16 and XPB, XPD, p62, p44, p34 or MAT1 (the latter is part of the TFIIH complex). Camonis et al. do not disclose proteins in the Mrell/Rad50 complex.

Hence, withdrawal of the § 102 rejection is respectfully requested.

CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney (612-373-6959) to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

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By their Representatives,

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Date June 26, 2003 By _____
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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 26 day of June, 2003.

Name Dawn M. Poole

Signature Dawn M. Poole